

REMARKS¹

In the outstanding Office Action, the Examiner rejected claims 1, and 3-7 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,121,689 to Capote et al. ("Capote") in view of U.S. Patent No. 6,426,556 to Lin ("Lin"); rejected claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Capote and Lin in view of U.S. Patent No. 6,077,726 to Mistry et al. ("Mistry"); rejected claims 21 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Capote and Lin, and further in view of U.S. Patent Application Publication No. 2002/0127844 to Grill et al. ("Grill"); and rejected claims 23 and 24 under 35 U.S.C. § 103(a) as being unpatentable over Capote in view of U.S. Patent No. 6,462,426 to Kelkar et al. ("Kelkar"), and further in view of Grill.

By this amendment, Applicants propose amending claims 1, 21, and 23, canceling claims 5, 22, and 24 without prejudice or disclaimer, and adding new claims 25-29. Support for the proposed amendments may be found in Applicant's specification at, for example, page 18, lines 22-26 and page 25, line 25 through page 26, line 3. Entry of this amendment would result in claims 1, 3, 6-21, 23 and 25-29 pending in this application, with claims 1, 3, 6-8, 21, 23, and 25-29 presented for examination.

Applicant initially notes that the rejection of canceled claims 5, 22, and 24 under 35 U.S.C. § 103(a) is moot. Moreover, Applicant respectfully traverses the rejection of claims 1, 3, 6-8, 21, and 23 under 35 U.S.C. § 103(a) on the ground that the Examiner

¹ The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicant declines to automatically subscribe to any statement of characterization in the Office Action.

has not established a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), each of three requirements must be met.

First, the reference or references, taken alone or combined, must teach or suggest each and every element recited in the claims. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references in a manner resulting in the claimed invention. Third, a reasonable expectation of success must exist. Moreover, each of the three requirements must “be found in the prior art, and not be based on applicant’s disclosure.” See MPEP § 2143, 8th Ed. (Rev. 5), August 2006.

In this application, no *prima facie* case of obviousness can be established for at least the reasons that the references, in combination, fail to teach each and every element of the claims.

A. Claims 1, 3, 6, and 7

Claim 1, as amended, recites a combination including “the resin molding is formed of a resin having a flux function, the resin is changing from liquid to solid when the bump electrodes are in a molten state, and a coefficient of elasticity of the resin is 20 MPa or more in a state where the resin is changing from liquid to solid when the bump electrodes are in the molten state” (emphasis added). Capote fails to teach or suggest at least this element.

Capote teaches “[a]fter cure, a modulus greater than 0.1 GPa, preferably greater than 4 GPa.” Capote, col. 10, lines 56-57. Although Capote’s recited numeral ranges

of “greater than 0.1 GPa” and “greater than 0.4 GPa” are within the claimed numeral range of “20 MPa or more,” as recited in amended claim 1, the numeral ranges taught by Capote are ones after cure. Amended claim 1, however, recites that “a coefficient of elasticity of the resin is 20 MPa or more in a state where the resin is changing from liquid to solid when the bump electrodes are in the molten state” (emphasis added). That is, amended claim 1 recites that “a coefficient of elasticity of the resin is 20 MPa or more,” when “the resin is changing from liquid to solid,” not after cure, as taught by Capote. Accordingly, Capote fails to teach or suggest a combination including “the resin molding is formed of a resin having a flux function, the resin is changing from liquid to solid when the bump electrodes are in a molten state, and a coefficient of elasticity of the resin is 20 MPa or more in a state where the resin is changing from liquid to solid when the bump electrodes are in the molten state,” as recited in amended claim 1.

Lin, cited by the Examiner for allegedly teaching “a low dielectric constant insulating film on a semiconductor surface (Fig. 15, 29), and a passivation film formed on the insulating film (Fig. 15, 32)” (Office Action, page 4), fails to cure the above-noted deficiencies of Capote. Lin is silent as to at least a “resin molding,” as recited in amended claim 1, and thus fails to teach or suggest a combination including “the resin molding is formed of a resin having a flux function, the resin is changing from liquid to solid when the bump electrodes are in a molten state, and a coefficient of elasticity of

the resin is 20 MPa or more in a state where the resin is changing from liquid to solid when the bump electrodes are in the molten state,” as recited in amended claim 1.

For at least the reason that the references, whether taken alone or in combination, fail to teach or suggest every element recited in amended claim 1, a *prima facie* case of obviousness cannot be established with respect to claim 1. Accordingly, Applicant respectfully requests that the Examiner enter the amendment to claim 1, and withdraw the rejection of claim 1 under 35 U.S.C. § 103(a).

Claims 3, 6, and 7 depend from claim 1 and thus require all of the elements recited in amended claim 1. Because Capote and Lin fail to teach or suggest every element recited in amended claim 1, that combination of references also fails to teach or suggest every element required by dependent claims 3, 6, and 7. A *prima facie* case of obviousness thus cannot be established with respect to claims 3, 6, and 7. Accordingly, Applicant respectfully request that the Examiner enter the proposed amendment to claim 1, and withdraw the rejection of claims 3, 6, and 7 under 35 U.S.C. § 103(a).

B. Claim 8

Claim 8 depends from claim 1, and thus requires all of the elements recited in claim 1. As discussed above, Capote and Lin fails to teach at least “the resin molding is formed of a resin having a flux function, the resin is changing from liquid to solid when the bump electrodes are in a molten state, and a coefficient of elasticity of the resin is 20 MPa or more in a state where the resin is changing from liquid to solid when the

bump electrodes are in the molten state,” as recited in amended claim 1, and required by claim 8. Mistry fails to cure this deficiency of Capote.

The Examiner appears to cite Mistry because the reference allegedly “teaches a passivation film comprising at least one layer formed of an organic film coating a connecting electrode (Fig. 1, 16).” Office Action, page 5. However, Mistry teaches “forming a polyimide layer (16) over a passivation layer (14).” Mistry, abstract (emphasis added). Moreover, Mistry is silent as to a “resin molding,” as recited in amended claim 1, and required by claim 8. Mistry thus fails to teach “the resin molding is formed of a resin having a flux function, the resin is changing from liquid to solid when the bump electrodes are in a molten state, and a coefficient of elasticity of the resin is 20 MPa or more in a state where the resin is changing from liquid to solid when the bump electrodes are in the molten state,” as recited in amended claim 1, and required by claim 8.

For at least the reason that neither Capote, nor Lin, nor Mistry teaches or suggests every element required by claim 8, a *prima facie* case of obviousness cannot be established with respect to claim 8. Accordingly, Applicant respectfully requests that the Examiner enter the amendment to claim 1, and withdraw the rejection of claim 8 under 35 U.S.C. § 103(a).

C. Claim 21

Claim 21, as amended, recites a combination including at least “the resin molding is formed of a resin having a flux function, the resin is changing from liquid to solid when

the bump electrode is in a molten state, and a coefficient of elasticity of the resin is 20 MPa or more in a state where the resin is changing from liquid to solid when the bump electrode is in the molten state.” As discussed above with respect to amended claim 1, Capote and Lin fail to teach or suggest at least this element. Grill fails to cure the deficiencies of Capote and Lin.

Grill is cited by the Examiner for allegedly teaching “[a] chip having a low-K dielectric film (Fig. 3, 310) and wiring film formed thereon (Paragraph 4).” Office Action, page 6. Grill generally teaches “provid[ing] an air gap-containing interconnect structure which maximizes air gap volume fraction.” Grill, paragraph [0016]. Grill, however, is silent as to at least a “resin molding,” as recited in amended claim 21, and thus fails to teach or suggest a combination including at least “a coefficient of elasticity of the resin is 20 MPa or more in a state where the resin is changing from liquid to solid when the bump electrode is in the molten state,” as recited in amended claim 21.

For at least the reason that the references, whether taken alone or in combination, fail to teach or suggest every element recited in amended claim 21, a *prima facie* case of obviousness cannot be established. Accordingly, Applicant respectfully requests that the amendment to claim 21 be entered, and that the rejection of claim 21 under 35 U.S.C. § 103(a) be withdrawn.

D. Claim 23

Claim 23, as amended, recites a combination including at least “the resin molding is formed of a resin having a flux function, the resin is changing from liquid to solid when

the bump electrode is in a molten state, and a coefficient of elasticity of the resin is 20 MPa or more in a state where the resin is changing from liquid to solid when the bump electrode is in the molten state.” As discussed above with respect to amended claim 21, Capote and Grill fail to teach or suggest at least this element. Kelkar fails to cure the deficiencies of Capote and Grill.

Kelkar is cited by the Examiner for allegedly teaching “a plurality of passivation layers having a pad of different material formed therein.” Office Action, page 7. Kelkar, however, is silent as to at least a “resin molding,” wherein “a coefficient of elasticity of the resin is 20 MPa or more in a state where the resin is changing from liquid to solid when the bump electrode is in the molten state,” as recited in amended claim 23. Kelkar thus cannot teach or suggest a combination including “the resin molding is formed of a resin having a flux function, the resin is changing from liquid to solid when the bump electrode is in a molten state, and a coefficient of elasticity of the resin is 20 MPa or more in a state where the resin is changing from liquid to solid when the bump electrode is in the molten state,” as recited in amended claim 23.

For at least the reason that the references, whether taken alone or in combination, fail to teach or suggest every element recited in amended claim 23, a *prima facie* case of obviousness cannot be established. Accordingly, Applicant respectfully requests that the amendment to claim 23 be entered, and that the rejection of claim 23 under 35 U.S.C. § 103(a) be withdrawn.

Applicant respectfully requests that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing claims 1, 3, 6-8, 21, 23, and 25-29 in condition for allowance. Applicant submits that the proposed amendments of claims 1, 21, 23, and 25-29 do not raise new issues or necessitate the undertaking of any additional search of the art by the Examiner, since all of the elements and their relationships claimed were either earlier claimed or inherent in the claims as examined. Therefore, this Amendment should allow for immediate action by the Examiner.

Furthermore, Applicant respectfully points out that the final action by the Examiner presented some new arguments as to the application of the art against Applicant's invention. It is respectfully submitted that the entering of the Amendment would allow the Applicant to reply to the final rejections and place the application in condition for allowance.

Finally, Applicant submits that the entry of the amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.

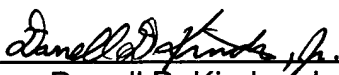
In view of the foregoing remarks, Applicant submits that this claimed invention, as amended, is not obvious in view of the prior art references cited against this application. Applicant therefore requests the entry of this Amendment, the Examiner's reconsideration of the application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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